

## **Claims**

**What is claimed is:**

1. A portable golf round data system comprising:
    - (a) a radiolocation receiver to receive at least one external locating signal from which the user's current location on a golf course can be determined;
    - (b) data storage in said collection unit for storing data relating to the location of golf course features;
    - (c) at least one microprocessor in said data collection unit operatively connected to the radiolocation receiver and to the data storage, the microprocessor programmed to:
      - 1) determine the user's current location on the course from the external locating signal; and
      - 2) generate graphical display data representing a portion of the course selected based on the user's current location; and
    - (d) a graphic display to display a graphical representation of the selected portion of the course, the graphical display including the user's current location.
  2. The portable golf round data system of Claim 1 wherein said course data is transferred to the said portable data collection unit via a wireless communication link.
  3. The portable golf round data system of Claim 2 wherein the wireless communication link is a cellular telephone data channel.
  4. The portable golf round data system of Claim 1 wherein said course data is transferred to said portable data collection unit by a connection to a data processor external to said portable data collection unit.
  5. The portable golf round data system of Claim 1 wherein said course data is transferred to said portable data collection unit from a data file accessible via the Internet.
  6. The portable golf round data system of Claim 1 wherein said course data is transferred to said portable data collection unit by installing removable data memory media to said portable unit.

*TJS P1*

7. The portable golf round data system of Claim 1 wherein said selected portion includes the green of the hole being played and the part of the course between the player's present position and that green.

8. The portable golf round data system of Claim 1 wherein said graphic display is adapted to show the direction in which the player intends the ball to travel due to the next stroke.

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9. The portable golf round data system of Claim 1 wherein said portable unit includes a data storage containing data relating to a predetermined skill level.

*TJS P2*

10. The portable golf round data system of Claim 9 wherein said predetermined skill level is based upon the player's past performance skill level.

11. The portable golf round data system of Claim 1 wherein said graphic display is adapted to show a player's position on a green, the cup in said green, and a representation of forces on a ball on said green along a line between said player position and said cup.

12. The portable golf round data system of Claim 1 wherein said graphic display is adapted to show the time remaining to complete some selected portion of a golf round.

13. The portable golf round data system of Claim 1 wherein said graphic display is adapted to show the number of the hole currently being played.

14. The portable golf round data system of Claim 1 further including a stroke register to register each stroke taken by a user.

15. The portable golf round data system of Claim 14 further including stroke data storage for storing location data for each stroke taken until said data can be subsequently retrieved for further analysis or long term storage.

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16. The portable golf round data system of Claim 14 wherein said graphic display is adapted to show the number of strokes a player has used on the current hole being played.

~~AS~~ 17. The portable golf round data system of Claim 14 wherein said graphic display is adapted to show a score card with the number of strokes used on each hole completed and the total used on the round.

~~AS~~ 18. The portable golf round data system of Claim 1 wherein said graphic display is adapted to show the location of at least one selected previous stroke in said stroke data storage and the resulting ball position after said stroke.

~~AS~~ 19. The portable golf round data system of Claim 14 wherein said stroke register includes a manually actuated switch contact.

~~AS~~ 20. The portable golf round data system of Claim 14 wherein said stroke register includes said microprocessor adapted for voice recognition of at least one selected word.

~~AS~~ 21. The portable golf round data system of Claim 14 wherein said stroke register includes said microprocessor adapted to receive and recognize telemetry signals emitted by telemetry equipped golf clubs.

~~AS~~ 22. The portable golf round data system of Claim 21 wherein said telemetry signals include sounds emitted by a telemetry equipped club when a stroke is taken with said club.

~~AS~~ 23. The portable golf round data system of Claim 21 wherein said telemetry signals include radio signals emitted by a telemetry equipped club when a stroke is taken with said club.

~~AS~~ 24. The portable golf round data system of Claim 14 wherein said stroke data is transferred from said portable data collection unit to a data processor external to said portable data collection unit.

~~AS~~ 25. The portable golf round data system of Claim 14 wherein said stroke data is transferred from said portable data collection unit to a data file accessible via the Internet

~~AS~~ 26. The portable golf round data system of Claim 14 wherein said stroke data is transferred from the said portable data collection unit via a wireless communication link.

*Spec's*  
27. The portable golf round data system of Claim 26 wherein the wireless communication link is a cellular telephone data channel.

*Golf*  
28. The portable golf round data system of Claim 9 wherein said graphic display is adapted to show the region on the course within which the ball will probably rest following the player's next stroke taking into consideration the club selected by the player and a predetermined skill level.

29. The portable golf round data system of Claim 24 wherein said data processor further includes means for generating a golf course plot with the location of all recorded strokes.

30. The portable golf round data system of Claim 24 wherein said data processor further includes means for printing commemorative certificates for predetermined events.

*Mobile*  
31. The portable golf round data system of Claim 1 wherein said graphic display is adapted to show a player information on the break of a putt from a straight line extending from said player's position on a green to the cup in said green.

32. A cellular radiotelephone comprising:

- a) a cellular radio transceiver to communicate with a cellular network;
- (b) a radiolocation receiver for receiving at least one external locating signal from which the user's current location on a golf course can be determined;
- (c) data storage in said cellular radiotelephone for storing data relating to the location of golf course features;
- (d) at least one microprocessor in said cellular radiotelephone operatively connected to the receiver and to the data storage for determining a player's current location on said course from said external locating signal and for calculating distances between said current location and at least one of said golf course features retained in said data storage; and
- (e) a display on said cellular radiotelephone connected to said processor and operative to display the distance between said current location and at least one selected golf course feature.

33. The cellular radiotelephone of Claim 32 wherein said display is adapted to show the club the player intends to use for the next stroke.
34. The cellular radiotelephone of Claim 32 wherein said portable unit includes a data storage containing data relating to the player's past performance skill level.
35. The cellular radiotelephone of Claim 32 wherein said display is adapted to show the time remaining to complete some selected portion of a golf round.
36. The cellular radiotelephone of Claim 32 wherein said display is adapted to show the number of the hole currently being played.
37. The cellular radiotelephone of Claim 32 further including a stroke register to register each stroke taken by a user.
38. The cellular radiotelephone of Claim 37 further including stroke data storage for storing location data for each stroke taken until said data can be subsequently retrieved for further analysis or long term storage.
39. The cellular radiotelephone of Claim 32 wherein said display is adapted to show the number of strokes a player has used on the current hole being played.
40. The cellular radiotelephone of Claim 37 wherein said stroke register includes a manually actuated switch contact.
41. The cellular radiotelephone of Claim 37 wherein said stroke register includes said microprocessor adapted for voice recognition of at least one selected word.
42. The cellular radiotelephone of Claim 37 wherein said stroke register includes said microprocessor adapted to receive and recognize telemetry signals emitted by telemetry equipped golf clubs.

43. The cellular radiotelephone of Claim 42 wherein said telemetry signals include sounds emitted by a telemetry equipped club when a stroke is taken with said club.

44. The cellular radiotelephone of Claim 42 wherein said telemetry signals include radio signals emitted by a telemetry equipped club when a stroke is taken with said club.

45. The cellular radiotelephone of Claim 37 wherein said stroke data is transferred from the said cellular radiotelephone via a cellular telephone data channel.

46. The cellular radiotelephone of Claim 37 wherein said stroke data is transferred from said portable data collection unit to a data processor external to said cellular radiotelephone.

47. The cellular radiotelephone of Claim 37 wherein said stroke data is transferred from said cellular radiotelephone to a data file accessible via the Internet

48. The cellular radiotelephone of Claim 46 wherein said data processor further includes means for generating a golf course plot with the location of all recorded strokes.

49. The cellular radiotelephone of Claim 46 wherein said data processor further includes means for printing commemorative certificates for specified events.

50. The cellular radiotelephone of Claim 32 wherein said display is adapted to show a player the probable distance a ball will travel when struck by a selected club.

51. The cellular radiotelephone of Claim 32 wherein said display is adapted to show a player information relating to the break of a putt from a straight line extending from said player's position on a green to the cup in said green.

52. A telemetry equipped golf club comprising:

- (a) a golf club; and
- (b) an emitter adapted to emit a signal that identifies said golf club from other golf clubs.

53. The telemetry equipped golf club of Claim 52 wherein said transmitter is adapted to emit a second signal when said club strikes a golf ball.

54. The telemetry equipped golf club of Claim 52 wherein said signal acoustic.

55. The telemetry equipped golf club of Claim 52 wherein said signal is electromagnetic radiation.

56. The telemetry equipped golf club of Claim 53 wherein said second signal is acoustic.

57. The telemetry equipped golf club of Claim 53 wherein said second signal is electromagnetic radiation.

58. The telemetry equipped golf club of Claim 54 wherein said transmitter consists at least one cavity in said club with said cavity configured to emit a sound when said club is swung to make a stroke.

59. A golf round data system comprising:

- (a) data storage for recording strokes taken by the user; and
- (b) a stroke detection module to detect strokes taken by a user without direct user input and to identify the golf club used to take each said stroke based on a signal emitted by said golf club.

60. The golf round data system of Claim 59 wherein said detection module is adapted to receive acoustic signals.

61. The golf round data system of Claim 59 wherein said detection module is adapted to receive electromagnetic signals.

62. A golf player aid method comprising:
- (a) storing information relating to the likely travel of a ball resulting from a stroke using at least one selected club;
  - (b) determining the player's location on a golf course; and
  - (c) indicating to the player information relating to the likely path of the ball due to the next stroke using the selected club.
63. The golf round data method of Claim 62 wherein said information to the player includes the likely distance to be achieved by a stroke which is not a putt.
64. The golf round data method of Claim 62 wherein said information to the player includes the likely break of a putt away from a straight line from the player's present position on a green and the cup in said green.
65. A golf data display comprising:
- (a) a locator which determines the user's current location on a golf course;
  - (b) data storage retaining the expected ball travel distance to be achieved by at least one selected club; and
  - (c) at least one indicator to show information relating to the likely path of the ball due to the next stroke using the selected club.
66. The golf data display of claim 65 wherein said data display is portable to be carried by the user.
67. The golf data display of claim 65 wherein said locator is a radiolocation receiver adapted to receive at least one external locating signal from which the user's current location on a golf course can be determined.
68. The golf data display of claim 65 wherein said club identification includes one or more key switches and an indicator showing said player the particular club he has selected.

69. The golf data display of claim 65 wherein said club identification is a telemetry receiver adapted to recognize which specific club a player is manipulating in some predetermined manner.
70. The golf data display of claim 65 wherein said ball travel distance is determined from the past performance of said player.
71. The golf data display of claim 65 wherein said indicator is a graphical display adapted to show at least one course feature and a course region within which a predetermined fraction of said player's shots would be expected to lie following a stroke taken with said intended next club.
72. The golf data display of claim 71 wherein said graphical display is further adapted to allow the user to indicate the intended direction of said next stroke.
73. A golf putting aid comprising:
- (a) a locator which determines the user's current location on a golf course;
  - (b) data storage retaining information from which the break of a putted ball from a straight line from the current lie on a green to the cup of that green can be estimated; and
  - (c) at least one indicator conveying to the player expected approximate break distance and direction of a putted ball from a straight line between said player's current location and said cup.
74. The golf putting aid of claim 73 wherein said locator is a radiolocation receiver adapted to receive at least one external locating signal from which the user's current location on a golf course can be determined.
75. The golf putting aid of claim 73 wherein said information retained in data storage includes a number of break distances and directions determined from a series of test puts to the current cup location from multiple sample locations on the green.

76. The golf putting aid of claim 73 wherein said information retained in data storage includes green elevation contours and the current cup location.
77. The golf putting aid of claim 73 wherein said indicator includes an alpha numeric display of estimated break distance and direction.
78. The golf putting aid of claim 73 wherein said indicator includes graphical display of green elevation contours to be traversed from the current ball position on the green to the cup.
79. The golf putting aid of claim 73 wherein said indicator includes a graphical display of forces to be exerted on said putted ball by green contours.
80. The golf putting aid of claim 73 wherein said indicator includes an audible voice.

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